

CLAIMS

1. A method of decontaminating heavy metal contaminated soil or sludge which includes
 - a) treating soil or sludge with an acid liquor at a pH below 2 and at a solids content from 5 to 30% in a first treatment stage
 - 5 b) separating the liquid and solid phases from the first treatment stage
 - c) mixing the solids from the first treatment stage with a fresh acid liquor at a pH below 2 and a solids content from 5 to 30% in a second treatment stage
 - d) separating the liquid and solid phases from the second treatment stage
 - 10 e) treating the liquor separated in step b) from the first treatment stage to precipitate heavy metals
 - f) separating the precipitated heavy metals from the liquor of step e) and recycling the liquor for use in the process
 - 15 g) treating the solids from step d) to adjust the pH to a level acceptable for a soil conditioner or fertilizer
 - h) using the liquor from step d) as the acidic liquor in the first treatment stage for fresh batches of soil or sludge.
2. A method as claimed in claim 1 in which the acid is sulfuric acid.
- 20 3. A method as claimed in claim 1 in which the heavy metals are precipitated by adding a base to adjust the pH of the liquor to precipitate the metals as salts
- 25 4. A method as claimed in claim 3 in which the base is potassium hydroxide.
5. A method as claimed in claim 1 in which the solids from step d) are blended with crushed limestone.
- 30 6. A method as claimed in claim 1 in which the first and second treatment stages are carried out in closed vessels containing a source of ozone in the head space of the closed vessels.

7. A method of decontaminating contaminated soil or sludge which includes sulfur containing materials which method includes
 - 5 a) treating soil or sludge with an acid liquor at a pH below 2 and at a solids content from 5 to 30% in a closed vessel containing a source of ozone in the head space of the closed vessel.
 - b) separating the liquid and solid phases from the treatment stage
 - c) treating the liquor separated in step b) from the treatment stage to precipitate heavy metals
 - 10 d) separating the precipitated metals from the liquor of step c) and recycling the liquor for reuse in the process
 - e) treating the solids from step b) to adjust the pH to a level acceptable for a soil conditioner or fertilizer
- 15 8. A method as claimed in claim 7 wherein the ozone is externally generated and introduced into the head space.